

*IODAMOEBEA WALLACEI* N. SP. OF AMOEBEA FOUND IN  
*CERCOPITHECUS DNA* L. (MAMMALIA-PRIMATE)  
(SARCODINA-ENDAMOEBIDAE)

BY

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*Species of IODAMOEBEA Prowazek*

*Iodamoeba bütschlii* was first seen in its vegetative form by Prowazek in 1911 and called *Entamoeba williansi* but was mistakenly associated with *Entamoeba coli* cysts. However, Wenyon said that the cysts of *Iodamoeba bütschlii* were first seen by him in 1906 in the Sudan and were not seen again till 1955, when a description was given.

In 1912, Prowazek gave a very brief and incomplete description of an amoeba which he saw in a child in the Caroline Islands. He gave it the name *Entamoeba bütschlii* and a single cyst was figured, if it represents one of the "iodine cysts" it is evidently deformed or degenerated. Dobell and O'Connor (1919) came to the conclusion that Prowazek was actually describing the "iodine cyst" and its ameboid stage, and that the human parasite should therefore be known as *Iodamoeba bütschlii*, and that it is quite evident that the figures given by Prowazek cannot represent either *E. coli* or *E. histolytica*.

On the other hand, Brug (1921) believed that another amoeba, previously described by Prowazek (1911-1912) as *Entamoeba williansi*, was a mixture of the "iodine cyst" and *Entamoeba coli*. In support of

this contention he stated that he examined Prowazek's original preparations, and saw in them the iodine cysts and the amoeba, an observation which has also been made by Noller (1921). There can be no doubt, however, that Prowazek's descriptions and figures were based chiefly on *Entamoeba coli*, and though some of the forms described by him may have been other amoebae; the name *E. williansi* must become a synonym of *Entamoeba coli*. The fact that Brug and Noller found the iodine cysts and its amoeba in the original preparations does not prove that the Prowazek described them.

Taliaferro and Becker (1922) supported Brug and Noller in their contention that the correct specific name must be *E. williansi*. Brug further considered that the amoeba belonged to the same genus as *Endolimax nana*, while Kofoid, Kornhauser, and Swezy (1919) concluded that they are merely large races of *Endolimax nana*. Rodenhuis (1919) also expressed the opinion that the amoeba belonged to the genus *Endolimax*, and proposed to name it *Endolimax pileonucleatus*.

Cauchemez (1921) studied this organism, and in agreement with Brumpt came to the conclusion that it could not be identified with either of Prowazek's amoebae *E. williansi* or *E. bütschlii*, and proposed to name it *Iodamoeba wenyoni*, Brumpt (1921). This is undoubtedly incorrect, for if it is necessary to reject both of Prowazek's names, the correct name would be *Iodamoeba pileonucleata*. It is best to consider the organism as identical with Prowazek's *E. bütschlii*, and to name it *Iodamoeba bütschlii* as Dobell and O'Connor (1919) have done.

#### *IODAMOEBEA BUTSCHLII* in monkeys.

Morphologically *Iodamoeba* from apes and monkeys is indistinguishable from *Iodamoeba bütschlii*, type-species from man.

*Iodamoebae* were first noted in monkeys (*Macacus cynomolgus*) by Brug in 1921; he believed them to be *Endolimax* and gave them the specific name *Endolimax kueneni* but his descriptions and figures indicate that they belong to the genus *Iodamoeba*.

Since then *Iodamoeba* have been reported from monkeys by Hegner and Taliaferro (1924) in *Cebus variegatus*; Kessel (1924) from one of the seven monkeys from South China of the genus *Pithecus*; Kessel (1924, 1927) in *Macacus*.

It is interesting to see that forty four wild monkeys from the Philippines studied by Hegner and Chu (1930) did not present *Iodamoeba*. This *Iodamoeba* was not seen in living conditions and did not appear on any of their stained slides; however, of the twenty captive monkeys studied by Kessel in China 13 of 65% presented *Iodamoeba bütschlii*.

Wenyon found *I. bütschlii* in 1926 in a gorilla and Deschiens in 1927 in *Macacus sinicus* and *Cercopithecus callitrichus*. Also Deschiens (1927) presented the results of examination on eight consecutive days of stools from seven chimpanzees at the Pasteur Institute of Paris.

*Iodamoeba* was found in three of those monkeys. Deschiens, following Brug, named the organism *Endolimax kueneni*. Smith in 1928 found it in *Macacus rhesus*; Hegner and Shumaker 1928, Hegner 1934, and Wenrich 1935 and 1937 in chimpanzees and found four of them infected with *I. bütschlii*.

Observation of intestinal protozoa of 19 chimpanzees in Orange Park Florida (long time captives) reported by Faust in 1931 and 1932, revealed three infected with *I. bütschlii*.

Wenrich in 1937 also found *I. bütschlii* in four Rhesus Monkeys, three Kra Monkeys, two Green Monkeys, two african mangabay monkeys, one Mona Monkey, one Japanese Macaque, three mandrills, one Anubis Baboon, one Gelada Baboon and one Gorila.

Cysts of *I. bütschlii* were found also by Mackinnon and Dibb in the feces of two gorillas, and also in those of a Guinea baboon (*Papio papio*), *Cercocebus aethiops*, *Cercopithecus mona* and a white-nosed Monkey (*C. ascanius schmidtii*).

Hegner (1928) in "The evolutionary significance of the Protozoan parasites of monkeys and man" says: "most of the infected monkeys appear to be carriers, that is, the amoebae are present in the intestine where they grow, multiply and form cysts, but the host-parasite relations are such that symptoms do not appear".

#### MATERIAL AND METHOD

The material employed in this report was feces samples from two *Cercopithecus diana*. The monkeys were examined twice. The second examination was done approximately two weeks after.

These monkeys were brought from Africa and they are in the Como Park Zoo, St. Paul, Minn.

The first technique used in order to detect the amoebas was iodine stain. With this stain it was possible to detect the shape, the nucleus and the presence of the glycogen vacuole. This technique is temporary. After it was used a permanent stain, Ironhaematoxylin stain.

#### *Description IODAMOEBIA WALLACEI* n. sp.

The cysts when fully formed, usually measure about 8-13  $\mu$  in diameter; but they are often difficult to measure as they are subject to great variation in shape and size. They are frequently more or less lobed or irregular.

A single nucleus is present in the cyst. The cyst has a definite wall, but the most remarkable characteristic is that they have two vacuoles or "iodophilic bodies" in the cytoplasm quite separated by a portion of cytoplasm like in Figs. 1 and 2; so the parasite from *Cercopithecus diana* is regarded as an undescribed species of *Iodamoeba*.

Key for species of genus *Iodamoeba*

1. Cyst with one vacuole ..... 2  
1'. Cyst with two vacuoles ..... *I. wallacei* n. sp.  
2(1). Host, pig ..... *I. suis*  
2'. Host, man ..... *I. bütschlii*

SUMMARY

*Iodamoeba wallacei* n. sp. was found in *Cercopithecus diana* L. The principal characteristic is two vacuoles in the cytoplasm during the cyst-stage. Key and drawing are added.

RESUMEN

Se describe *Iodamoeba wallacei* n. sp. *Cercopithecus diana* L. La característica principal de esta amoeba es la presencia de dos vacuolas en el citoplasma durante el estado de quiste. Se agregan claves y dibujo.

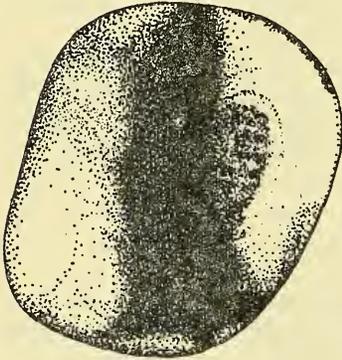


Fig. 1.—*Iodamoeba wallacei* n. sp.  
(drawing).

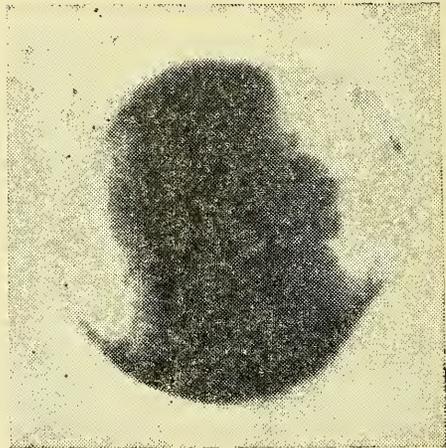


Fig. 2.—*Iodamoeba wallacei* n. sp.  
(picture).

Note.—The slides used in the present work are kept in the Department of Zoology, University of Concepcion, Chile.

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